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KUBOTA HIROYASU**(54) **SUBSTRATE FOR SEMICONDUCTOR DEVICE**

be enhanced in reliability.

(57) Abstract:

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PURPOSE: To enable the surface of an epitaxial wafer to be reduced in micro roughness to the irreducible minimum by a method wherein the surface orientation of a (100) substrate is limited to a specific range when a VLSI epitaxial wafer is manufactured.

CONSTITUTION: In a silicon epitaxial wafer of a silicon single crystal (100) plane substrate wafer 5, the substrate wafer 5 forms a tilt angle of θ with a (100) plane in the direction of [011] or [011] 3 and a tilt angle of ϕ with a (100) plane in the direction of [011] or [011] 4, where the angles of θ and ϕ are so set as to satisfy formulas, $30^\circ \leq \theta \leq 22^\circ$ and $30^\circ \leq \phi \leq 22^\circ$. In restate, the substrate 5 is controlled in off-angle, whereby the surface of an epitaxial wafer can be more and stably improved in micro roughness than the substrate 5 and a conventional epitaxial wafer, and furthermore an oxide film breakdown strength such as electrical properties is enhanced. When a wafer substrate of this design is used as a starting material for forming a VLSI, a device can

